

**WHAT IS CLAIMED IS:**

1                   1.       A composition comprising a non-covalent association complex of:  
2                   a) a positively-charged backbone; and  
3                   b) at least two members selected from the group consisting of:  
4                   i) a first negatively-charged backbone having a plurality of attached  
5                   imaging moieties;  
6                   ii) a second negatively-charged backbone having a plurality of attached  
7                   targeting agents;  
8                   iii) at least one member selected from the group consisting of RNA, DNA,  
9                   ribozymes, modified oligonucleotides and cDNA encoding a  
10                  selected transgene;  
11                  iv) DNA encoding at least one persistence factor; and  
12                  v) a third negatively-charged backbone having a plurality of attached  
13                  biological agents;  
14                  wherein said association complex carries a net positive charge and at least one of said two  
15                  members from group b) is selected from groups i), iii) or v).

1                   2.       A composition in accordance with claim 1, wherein said biological  
2                  agent is a therapeutic agent.

1                   3.       A composition in accordance with claim 2, wherein said  
2                  therapeutic agent is selected from the group consisting of VEGF, botulinum toxin, a  
3                  blocker of VEGF, and insulin.

1                   4.       A composition in accordance with claim 1, wherein said biological  
2                  agent is a cosmeceutical agent.

1                   5.       A composition in accordance with claim 4, wherein said  
2                  cosmeceutical agent is Epidermal growth factor.

1                   6.       A composition in accordance with claim 1, comprising at least  
2                  three members selected from groups i) through v).

1                   7.       A composition in accordance with claim 1, comprising at least one  
2                  member from each of groups i), ii), iii) and iv).

1                   **8.**        A composition in accordance with claim **1**, comprising at least one  
2 member from each of groups i) and ii).

1                   **9.**        A composition in accordance with claim **1**, comprising at least one  
2 member from each of groups ii), iii) and iv).

1                   **10.**      A composition in accordance with claim **1**, wherein said positively-  
2 charged backbone has a length of from about 1 to 4 times the combined lengths of said  
3 members from group b).

1                   **11.**      A composition in accordance with claim **1**, wherein said positively-  
2 charged backbone comprises a polymer having attached positively charged branching  
3 groups.

1                   **12.**      A composition in accordance with claim **11**, wherein said polymer  
2 is a peptide and said positively charged branching groups are selected from the group  
3 consisting of -(gly)<sub>n</sub>-arg-arg-arg-arg-arg-arg, HIV-TAT and fragments thereof,  
4 wherein the subscript n is an integer of from 0 to 20.

1                   **13.**      A composition in accordance with claim **12**, wherein n is an integer  
2 of from 0 to 8.

1                   **14.**      A composition in accordance with claim **12**, wherein n is an integer  
2 of from 2 to 5.

1                   **15.**      A composition in accordance with claim **12**, wherein said HIV-  
2 TAT fragment has the formula (gly)<sub>p</sub>-RGRKKRRQRRR-(gly)<sub>q</sub>, wherein the subscripts p  
3 and q are each independently integers of from 0 to 20, and said HIV-TAT fragment is  
4 attached to said positively charged backbone via either the C-terminus or the N-terminus.

1                   **16.**      A composition in accordance with claim **15**, wherein the subscripts  
2 p and q are each independently integers of from 0 to 8.

1                   **17.**      A composition in accordance with claim **15**, wherein the subscripts  
2 p and q are each independently integers of from 2 to 5.

1                   **18.**       A composition in accordance with claim **11**, wherein said polymer  
2 is a polylysine and said positively charged branching groups are attached to the lysine  
3 sidechain amino groups and are selected from the group consisting of -gly-gly-gly-arg-  
4 arg-arg-arg-arg-arg-arg and HIV-TAT.

1                   **19.**       A composition comprising a non-covalent association complex of a  
2 positively-charged backbone having at least one attached efficiency group and at least one  
3 nucleic acid member selected from the group consisting of RNA, DNA, ribozymes,  
4 modified oligonucleotides and cDNA encoding a selected transgene.

1                   **20.**       A composition in accordance with claim **19**, wherein said  
2 positively charged backbone is polylysine.

1                   **21.**       A composition in accordance with claim **19**, wherein said  
2 efficiency group is selected from the group consisting of (Gly)<sub>n1</sub>-(Arg)<sub>n2</sub>, wherein the  
3 subscript n1 is an integer of from 3 to about 5, and the subscript n2 is an odd integer of  
4 from about 7 to about 17, and TAT domains.

1                   **22.**       A composition in accordance with claim **19**, wherein said  
2 positively charged backbone having at least one attached efficiency group is a 150,000 to  
3 300,000 polylysine backbone having a plurality of attached Gly<sub>3</sub>Arg<sub>7</sub> groups wherein the  
4 degree of lysine saturation is from about 5% to about 30%.

1                   **23.**       A composition in accordance with claim **19**, wherein said nucleic  
2 acid member is cDNA encoding a selected transgene.

1                   **24.**       A composition in accordance with claim **19**, wherein said nucleic  
2 acid member is part of a plasmid that expresses a detectable product.

1                   **25.**       A composition in accordance with claim **24**, wherein said  
2 detectable product is a fluorescent protein.

1                   **26.**       A composition in accordance with claim **24**, wherein said  
2 detectable product is a blue fluorescent protein.

1                   **27.**       A composition in accordance with claim **24**, wherein said plasmid  
2 further comprises a CMV promoter.

1                   **28.**    A method for delivery of a biological agent to a cell surface in a  
2 subject, said method comprising administering to said subject a composition comprising:

3                   (a) a positively charged backbone;

4                   (b) at least one biological agent selected from the group consisting of:  
5                   (i) a first negatively charged backbone having a plurality of attached  
6                    imaging moieties;  
7                   (ii) at least one member selected from the group consisting of RNA,  
8                    DNA, ribozymes, modified oligonucleotides and cDNA  
9                    encoding a selected transgene; and  
10                   (iii) a third negatively charged backbone having a plurality of  
11                    attached therapeutic agents; and  
12                   (c) a second negatively charged backbone having a plurality of attached  
13                    targeting agents;

14                   wherein said composition is a non-covalent association complex of said positively  
15 charged backbone, said biological agent and said second negatively charged backbone  
16 having a plurality of attached targeting agents, and carries a net positive charge.

1                   **29.**    A method in accordance with claim **28**, wherein said biological  
2 agent is an oligonucleotide or a cDNA encoding a selected transgene, and said  
3 composition further comprises DNA encoding at least one persistence factor.

1                   **30.**    A method in accordance with claim **28**, wherein said biological  
2 agent is a first negatively charged backbone having a plurality of attached imaging  
3 moieties.

1                   **31.**    A method in accordance with claim **28**, wherein said biological  
2 agent is a third negatively charged backbone having a plurality of attached therapeutic  
3 agents.

1                   **32.**    A method in accordance with claim **28**, wherein said administering  
2 is intravenous.

1                   **33.**    A method in accordance with claim **28**, wherein said administering  
2 is transdermal.

1                   **34.**    A method in accordance with claim **28**, wherein said administering  
2 is carried out using an angioplastic balloon.

1                   **35.**    A method in accordance with claim **28**, wherein said administering  
2 is carried out using a catheter.

1                   **36.**    A method in accordance with claim **28**, wherein said administering  
2 is intraperitoneal.

1                   **37.**    A method in accordance with claim **28**, wherein said composition  
2 is in a gel formulation.

1                   **38.**    A method for preparing a pharmaceutical composition, said method  
2 comprising combining a positively charged backbone component and at least two  
3 members selected from the group consisting of

- 4                   i) a first negatively-charged backbone having a plurality of attached  
5                   imaging moieties;
- 6                   ii) a second negatively-charged backbone having a plurality of attached  
7                   targeting agents;
- 8                   iii) at least member selected from the group consisting of RNA, DNA,  
9                   ribozymes, modified oligonucleotides and cDNA encoding a  
10                  selected transgene;
- 11                  iv) DNA encoding at least one persistence factor; and
- 12                  v) a third negatively-charged backbone having a plurality of attached  
13                  therapeutic agents;

14                  with a pharmaceutically acceptable carrier to form a non-covalent association complex  
15                  having a net positive charge, with the proviso that at least one of said two members from  
16                  groups i) through v) is selected from groups i), iii) or v).

1                   **39.**    A kit for formulating a pharmaceutical delivery composition, said  
2 kit comprising a positively charged backbone component and at least two members  
3 selected from the group consisting of

- 4                   i) a first negatively-charged backbone having a plurality of attached  
5                   imaging moieties;

- ii) a second negatively-charged backbone having a plurality of attached targeting agents;
- iii) at least one member selected from the group consisting of RNA, DNA, ribozymes, modified oligonucleotides and cDNA encoding a selected transgene;
- iv) DNA encoding at least one persistence factor; and
- v) a third negatively-charged backbone having a plurality of attached therapeutic agents;

and instructions for preparing said pharmaceutical delivery composition.

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